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EXAMINER	
ISMAIL, SHAWKI SAIF	

ART UNIT	PAPER NUMBER
2155	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/934,884	REN, WENGE	
	Examiner	Art Unit	
	Shawki S Ismail	2155	

-- The MAILING DATE of this c mmunication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-44 are presented for examination.

The references in applicant's IDS form 1449 have been considered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1-6, 9-14, 16-23, 25-40, and 42-44, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Baskey et al.,** (Baskey) U.S. Patent No. **6,148,410** and in view of **Srikanth et al.,** (Srikanth) U.S. Patent No. **6,556,547.**

4. As to claim 11, 12, 37, and 38 Baskey teaches a protocol redundancy method comprising the steps of:

providing a router having an active processor (col. 1, Line 66 – col. 2, line 7); coupling a standby processor to said active processor (col. 1, Line 66 – col. 2, line 7);

forwarding network protocol information from said active processor to said standby processor for synchronizing link configuration and protocol states of said active processor at said standby processor upon coupling of said standby processor to said standby processor (col. 3, lines 32-37); and

switching said router to said standby processor when a failure is detected at said active processor (col. 1, Line 66 – col. 2, line 7); wherein all states of said protocol immediately function as if the failure had not occurred (col. 1, Line 66 – col. 2, line 7).

Baskey does not explicitly teach wherein the protocol is an Open Shortest Path First (OSPF) protocol. Srikanth teaches a configuration in which redundant routers are provided in order to transparently transition a standby router to an active router in case of failure along an OSPF link (abstract, col. 1, lines 46-53, col. 4, lines 55-60).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the teaching of Srikanth's into the teaching of Baskey in order to make the network stable. The advantage of shortest path first algorithms is that they result in smaller more frequent updates everywhere. They converge quickly, thus preventing such problems as routing loops and Count-to-Infinity (when routers continuously increment the hop count to a particular network) which makes for a stable network.

5. As to claims 2, 20, 33, and 34, they contain similar limitations as claims 11, 12, 37, and 38 as shown above; therefore, it is rejected under the same rationale.

6. As to claim 3, Baskey teaches the method of claim 2 wherein said link protocol information is link-state database information, OSPF configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information (col. 2, line 64 – col. 3, line 6).

7. As to claim 4, Baskey teaches the method of claim 2 further comprising the step of processing identical OSPF packets after synchronizing said link configuration and link protocol states between said active processor and said standby processor (col. 5, lines 53-57).

8. As to claim 5, Baskey teaches the method of claim 3 wherein said step of forwarding link protocol information is performed by the steps of:

creating a hidden OSPF interface for each area of said active processor (col. 4, lines 54-67);

creating a hidden OSPF interface for each area of said standby processor (col. 4, lines 54-67);

and

forwarding said link-state database information from said hidden OSPF interface of said active processor to said hidden OSPF interface of said standby processor until said link state database of said standby processor is synchronized with said link state database of said active processor (col. 4, lines 54-67).

9. As to claim 6, Baskey teaches the method of claim 5 further comprising the step of forwarding said OSPF configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information using said hidden OSPF interface of said active processor and said hidden OSPF interface of said standby processor (col. 4, lines 54-67).

10. As to claim 9, Baskey teaches the method of claim 1 further comprising the steps of:

updating network link protocol information at said active processor (col. 4, lines 54-57); and

forwarding said updated network link protocol information to said standby processor (col. 4, lines 54-57).

11. As to claim 10, Baskey teaches the method of claim 4 wherein said forwarding step is a process based on a Database Exchange Process of the OSPF protocol (col. 4, lines 54-57).

12. As to claims 11, 12, 37, and 38 they contain the combined limitations of claims 1 and 2 above; therefore, it is rejected under the same rationale.

13. As to claims 13 and 39, Baskey teaches a method for implementing OSPF redundancy comprising the steps of:

providing a router having an active processor means and a standby processor means (col. 1, lines 66 – col. 2, line 7);

building a hidden OSPF interface on said active processor means and a hidden OSPF interface on said standby processor means (col. 4, lines 54-67);

connecting said hidden OSPF interface of said active processor means to said hidden OSPF interface of said standby processor means over a communications link (col. 4, lines 54-67);

synchronizing an OSPF routing database using an OSPF protocol over said hidden OSPF interface, such that said OSPF routing database is synchronized when said hidden OSPF interface of said active processor means and said hidden OSPF interface of said standby processor means reach a full adjacency state (col. 4, lines 54-67);

transferring OSPF protocol information from said hidden OSPF interface of said active processor means to said hidden OSPF interface of said standby processor means over said communications link to mirror states of said active processor means and said standby processor means (col. 4, lines 54-67);

removing said hidden interface of said active processor means and said hidden interface of said standby processor means (col. 4, lines 54-67); and

assuming control by said standby processor means when a failure is detected in said active processor means (col. 1, line 66 – col. 2, line 7).

14. As to claim 14, Baskey teaches the method of claim 13 wherein said OSPF protocol information is OSPF configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information (col. 2, line 64 – col. 3, line 6).

15. As to claim 16, Baskey teaches the method of claim 13 further comprising the steps of:

updating network link protocol information at said active processor means (col. 4, lines 54-57); and

forwarding said updated network link protocol information to said standby processor means (col. 4, lines 54-57).

16. As to claim 17, Baskey teaches the method of claim 13 wherein said synchronizing step is a process based on a Database Exchange Process of the OSPF protocol (col. 4, lines 54-57).

17. As to claim 18, Baskey teaches the method of claim 13 further comprising the step of processing identical OSPF packets after synchronizing said link

configuration and link protocol states between said active processor and said standby processor (col. 5, lines 53-57).

18. As to claim 19, Baskey teaches the system for providing link protocol redundancy in a router comprising:

an active processor (col. 1, Line 66 – col. 2, line 7);

a standby processor (col. 1, Line 66 – col. 2, line 7);

means for forwarding network link protocol information from said active processor to said standby processor for synchronizing link configuration and link protocol states of said active processor at said standby processor (col. 3, lines 32-37); and

means for switching said router to said standby processor when a failure is detected at said active processor (col. 1, Line 66 – col. 2, line 7);

wherein all states of said link protocol immediately function as if the failure had not occurred (col. 1, Line 66 – col. 2, line 7).

19. As to claim 21, Baskey teaches the system of claim 19 wherein said link protocol information is link-state database information, OSPF configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information (col. 2, line 64 – col. 3, line 6).

20. As to claim 22, Baskey teaches the system of claim 21 wherein said means for forwarding link protocol information comprises:

means for creating a hidden OSPF interface on for each area of said active processor (col. 4, lines 54-67);

means for creating a hidden OSPF interface for each area of said standby processor (col. 4, lines 54-67); and

means for forwarding said link-state database information from said hidden OSPF interface of said active processor to said hidden OSPF interface of said standby processor until said link state database of said standby processor is synchronized with said link state database of said active processor (col. 4, lines 54-67).

21. As to claim 23, Baskey teaches the system of claim 22 wherein said means for forwarding link protocol information comprises forwarding said OSPF configuration information, said OSPF adjacencies information, said OSPF interface information and said OSPF global protocol information using said hidden OSPF interface of said active processor and said hidden OSPF interface of said standby processor (col. 4, lines 54-67).

22. As to claim 25, Baskey teaches the system of claim 19 further comprising:

means for updating network link protocol information at said active processor (col. 4, lines 54-67); and

means for forwarding said updated network link protocol information to said standby processor (col. 4, lines 54-67).

23. As to claim 26, Baskey teaches the system of claim 19 wherein said means for forwarding network link protocol information comprises:

a redundant card manager for maintaining a synchronization state machine of said link protocol states for tasks of said protocol, said network link

protocol information being forwarded through said redundant card manager (col. 3, lines 44-48).

24. As to claim 27, Baskey teaches the system of claim 19 further comprising a task manager for determining said link protocol states of said tasks and forwarding said link protocol states to said redundant card manager (col. 3, lines 49-60).

25. As to claim 28, Baskey teaches the system of claim 19 wherein said means for switching said router to said standby processor comprises a software redundancy manager which interacts with said redundant card manager to indicate switch over from said active processor to said standby processor (col. 3, lines 49-60).

26. As to claim 29, Baskey teaches the system of claim 19 wherein said state of said tasks enters an OSPF_FAULT_INIT state which is an initial state before coupling of standby processor to said active processor (col. 9, lines 34-41).

27. As to claim 30, Baskey teaches the system of claim 19 wherein said state of said tasks enters an OSPF_FAULT_VERIFY state which is entered during synchronization of said link configuration of said active processor and said standby processor (col. 9, lines 34-41).

28. As to claim 31, Baskey teaches the system of claim 19 wherein said state of said tasks enters an OSPF_FAULT_SYNC state during forwarding of said link protocol information from said active processor to said standby processor, said link protocol information comprising link-state database information, OSPF

configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information (col. 9, lines 52-59).

29. As to claim 32, Baskey teaches the system of claim 19 wherein said state of said tasks enters an OSPF_FAULT_FULL state after said forwarding network link protocol information, said OSPF_FAULT_FULL state is a hot standby state wherein said standby state can immediately take over all operations of said standby processor (col. 9, lines 52-59).

30. As to claim 35, Baskey teaches the system of claim 19 wherein said means for forwarding is a process based on a Database Exchange Process of the OSPF protocol (col. 4, lines 54-57).

31. As to claim 36, Baskey teaches the system of claim 19 further comprising: means for processing identical OSPF packets after synchronizing said link configuration and link protocol states between said active processor and said standby processor (col. 5, lines 53-57).

32. As to claim 40, Baskey teaches the system of claim 39 wherein said OSPF protocol information is OSPF configuration information, OSPF adjacencies information, OSPF interface information and OSPF global protocol information (col. 2, line 64 – col. 3, line 6).

33. As to claim 42, Baskey teaches the system of claim 39 further comprising:

means for updating network link protocol information at said active processor means (col. 4, lines 54-67); and

means for forwarding said updated network link protocol information to said standby processor means (col. 4, lines 54-67).

34. As to claim 43, Baskey teaches the system of claim 39 wherein said means for forwarding is a process based on a Database Exchange Process of the OSPF protocol (col. 4, lines 54-57).

35. As to claim 44, Baskey teaches the system of claim 39 further comprising:

means for processing identical OSPF packets after synchronizing said link configuration and link protocol states between said active processor and said standby processor (col. 5, lines 53-57).

36. Claims 7, 8, 15, 24, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Baskey et al.,** (Baskey) U.S. Patent No. **6,148,410** and in view of **"Official Notice"** as evident by the Microsoft Computer Dictionary (Fifth Edition).

37. As to claim 7, Baskey teaches the method of the claimed invention as shown above. Baskey does not explicitly disclose wherein said link protocol information is in the form of Inter Process Control (IPC) messages.

Official Notice is taken that both the concept and advantages of Inter Process Control (IPC) are well known and expected in the art. It would have been obvious to one of ordinary skill in the art at the times of the applicant's invention to use link protocol information in the form of Inter Process Control (IPC) messages because (IPC) enables one application to control another application, and for several applications to share the same data without interfering with one another.

38. As to claims 8, 15, 24, and 41, Baskey teaches the method of the claimed invention as shown above. Baskey does not explicitly disclose wherein said

configuration information is determined from Command Line Interface (CLI) commands stored in a datastore.

Official Notice is taken that both the concept and advantages of Command Line Interface (CLI) are well known and expected in the art. It would have been obvious to one of ordinary skill in the art at the times of the applicant's invention to incorporate the use of Command Line Interface (CLI) into the invention of Baskey in order to make the system more flexible. Command based systems are usually programmable; this gives them flexibility unavailable in graphics-based system that does not have a programming interface.

Conclusion

39. The Prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Wils et al., U.S. Patent No. 6,397,260, teaches routers in data communication networks that are responsible for forwarding data messages along routing paths from source to destination network nodes.

b. Simpson et al., U.S. Patent application No. US2002/0078232, teaches a backup interface for providing protection against resource failures in Open Shortest Path First (OSPF) networks.

c. Fukushima et al., U.S. Patent No. 6,049,524, system switchover technology in a router device having a redundant configuration.

d. Frelechoux et al., European Patent application No. EP 1081899 A2, teaches a method of configuring an OSPF interface.

40. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawki S Ismail whose telephone number is 571-272-3985. The examiner can normally be reached on M-F 8:30 - 5:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shawki Ismail
Patent Examiner
December 10, 2004

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER